

## STRUCTURE OF A WHITE-TAILED PRAIRIE DOG BURROW

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*Key words:* *Cynomys leucurus*, burrow structure, hibernaculum, nest.

Little published information is available on the structure of white-tailed prairie dog (*Cynomys leucurus*) burrows. Clark (1971, 1977) described the structure of two partially excavated burrows in Wyoming, and Burns et al. (1989) described structure and function of another burrow in Montana. Neither of these studies reports finding either hibernating animals or remains of known hibernators who died over winter. This note describes the structure of a burrow system in Colorado that had a known history of prairie dog use for two years prior to excavation. Burrow excavation was undertaken to establish fates of two juveniles who hibernated in the burrow in 1988 but were not resighted in 1989.

The excavated burrow is located on the Arapaho National Wildlife Refuge, Walden, Colorado (Jackson County, TSN R79W S5). Dominant shrub species include greasewood (*Sarcobatus vermiculatus*), rabbitbrush (*Chrysothamnus nauseosus*), and sagebrush (*Artemisia tridentata*). Dominant grasses are wheatgrasses (*Agropyron* spp.). The burrow system was excavated by hand in June 1989. During excavation measurements were taken periodically of depth and dimensions of tunnels and chambers.

Four entrances were located (A, B, C, and D in Fig. 1). One of these entrances had an associated mound. Remaining entrances opened into semicircular pits approximately 0.6 m in diameter. No material had been transported from below the surface or from the surrounding surface to form a crater, as constructed by black-tailed prairie dogs (*Cynomys ludovicianus*) (King 1955, Cincotta 1989). All entrances, except the mound, were filled with loose soil.

The mound entrance descended from one end

of an oval mound 1.5 m long, 1.2 m wide, and 0.2 m high at an angle of 70° for approximately 0.5 m and leveled off at a depth of 0.4-0.5 m. Tunnels connecting entrances measured 80-220 mm high and 80-200 mm wide and were approximately circular in cross section. These connecting tunnels were all within 0.5 m of the surface. A tunnel leading to the nest chamber descended further. Turning bays, as described by Scheffer (1937) for black-tailed prairie dogs, were found near one entrance, D (Fig. 1).

The nest chamber tunnel descended from an entrance without a mound (D in Fig. 1). A side tunnel connected to the mound. After branching, the tunnel gradually descended to a maximum depth of 1.25 m. Another branch, closer to the nest, appeared to rise and was not excavated due to time constraints. The tunnel leading to the nest chamber was 115-150 mm wide and 105-225 mm high. In front of the nest chamber were three small chambers, 190-350 mm long and 100-225 mm in diameter. One of these chambers, 350 mm before the nest chamber, contained old fecal material. Whitehead (1927) reported a feces-filled chamber in a black-tailed prairie dog burrow and suggested prairie dogs used it to avoid drowning. The present burrow system, however, had no provision to trap air if submerged (Foster 1924). Other chambers near bends in the tunnel may have permitted animals to pass one another. No stored food was found in any chambers.

An enlarged chamber was located at the end of the burrow system. This chamber had a domed ceiling, a bowl-shaped floor, and measured 210 mm high by 210 mm wide by 250 mm long. Contained within the chamber was a mass of dry, well-chewed plant material, primarily

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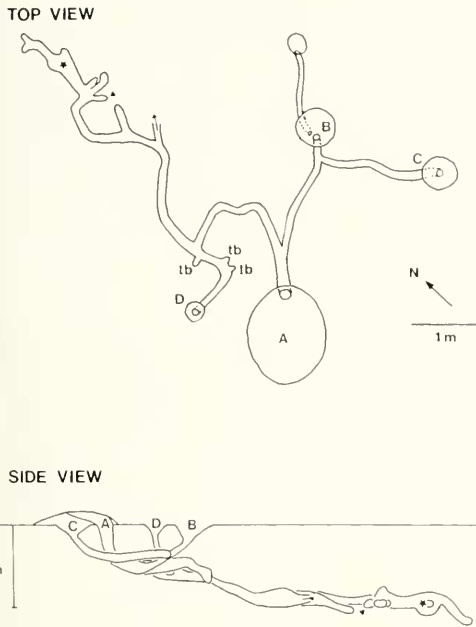


Fig. 1. Structure of excavated white-tailed prairie dog burrow. Capital letters indicate entrances to the burrow system. The nest chamber is indicated by a solid star. The location of a feces-filled chamber is indicated by a solid triangle. Turning bays are indicated by *tb*.

grasses. This was probably a nest chamber and not a food storage area because the plants found were not preferred food plants (Kelso 1939, personal observation). Several small out-pocketings were found off the nest chamber. While the nest chamber and adjacent chambers and out-pocketings superficially resembled a "maternity area" as described by Burns et al. (1989), this burrow had no known use as a maternity burrow in three years prior to excavation. It did, however, resemble deep, permanent systems described by Egoscue and Frank (1984).

Within the nest materials were skeletal remains and an eartag of a subadult female who hibernated in 1987 and was not resighted in 1988. Average frost depth in this area is between 500 mm and 1 m (Visher 1945), just above nest chamber depth. Juvenile males who used this burrow as a hibernaculum in 1988 were not resighted nor were their remains found.

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